# Personal Finance

## 7.2 Conditions of a Annuity

### Compounding

| | |
|---|---|
| Daily | 365 |
| Weekly | 52 |
| Bi weekly | 26 |
| Quarterly | 4 |
| Monthly | 12 |
| Semi Annually | 2 |
| Annually | 1 |

May 11-7:37 AM

## Calculating Total Loan Amount

Investigation 7.2

- Interest Rate
- Length of Term
- Payment Frequency

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**Which investment is better?**

Jaspreet is considering two investment options for saving $500 a month.

**Option 1:** monthly payment of $500, invested at 6% per year, compounded monthly. 3

**Option 2:** semi-monthly payment (on the 15th and the 30th of each month) of $250, invested at 5.85% per year, compounded semi-monthly. 3

May 16-7:26 AM

## Calculating Total Loan Amount

Investigation 7.2

p. 415

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**Option 2:** semi-monthly payment (on the 15th and the 30th of each month) of $250, invested at 5.85% per year, compounded semi-monthly.

N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
END

4. Assume that the interest rate and the payment remain the same for the investment option in step 3. Determine the future value of this investment option in 10 years.
5. What factors, other than the annual interest rate, affect the future value of an investment?

May 16-7:26 AM

## Calculating Total Loan Amount

Investigation 7.2

p. 415

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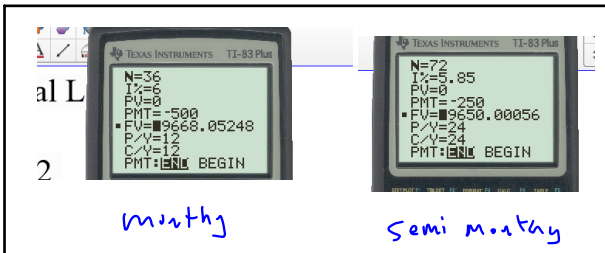
| | | |
|---|---|---|
| N= | 120 | 240 |
| I%= | 6 | 5.85 |
| PV= | 0 | 0 |
| PMT= | −500 | −250 |
| FV= | 91 939.67 | 91 406.54 |
| P/Y= | 12 | 24 |
| C/Y= | 12 | 24 |
| END | | |

4. Assume that the interest rate and the payment remain the same for the investment option in step 3. Determine the future value of this investment option in 10 years.
5. What factors, other than the annual interest rate, affect the future value of an investment? I% ↑ impact, but compounding

May 16-7:26 AM

May 9-9:52 AM




monthly

semi monthly

↑ Interest Rate
19.05 extra

May 9-9:50 AM

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**Example** **The Effect of the Term of the Loan on the Amount Paid**

Leezel needs to repay a $1500 loan. Her bank offers personal loans for one to five years at 8.5% per year, compounded monthly.

a) Leezel can afford to make monthly payments of $80. How many months will it take her to repay the loan?

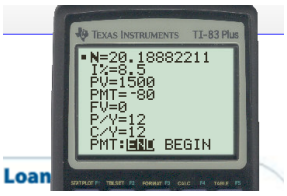
b) What is the monthly payment if Leezel selects a one-year term?

c) What is the monthly payment if Leezel selects a two-year term?

d) What factors may influence Leezel's decision?

N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
END

Apr 24-7:29 AM




∴ 20.19 months

Loan

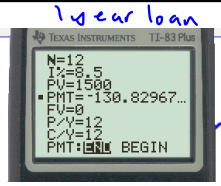
Loan 1500

80 x 20.19 = 1615.20

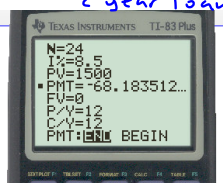
115.20 Interest

May 9-10:01 AM

1 year loan




2 year loan




130.93 x 12
= 1569.96

69.18 x 24
= 1636.32

May 9-10:03 AM

May 9-10:04 AM

p. 416

**Example** **The Effect of the Term of the Loan on the Amount Paid**

Leezel needs to repay a $1500 loan. Her bank offers personal loans for one to five years at 8.5% per year, compounded monthly.

a) Leezel can afford to make monthly payments of $80. How many months will it take her to repay the loan?

b) What is the monthly payment if Leezel selects a one-year term? [−130.93] x 12 = 1569.16

c) What is the monthly payment if Leezel selects a two-year term? [−69.18] x 24 = 1636.32

d) What factors may influence Leezel's decision? – her other monthly expenses - budget

a) at $80 it will take 21 months

20.19 x $80 = $1616.00

Apr 24-7:29 AM

Payment Frequency

Kierra buys a new VW for $26000 including all applicable taxes at 3.6% compounded monthly, for 5 years. The dealership offers her various payment options.

i) What would her payments be if she chose monthly payments?

N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
END

ii) What is the total price of the car.

What would her payments be if she chose biweekly payments?

N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
END

What is the total price of the car.

Apr 24-7:35 AM

Payment Frequency

Kierra buys a new VW for $26000 including all applicable taxes at 3.6% compounded monthly, for 5 years. The dealership offers her various payment options.

i) What would her payments be if she chose monthly payments?

N= 12 x 5 = 60
I%= 3.6
PV= 26000
PMT= -474.15
FV= 0
P/Y= 12
C/Y= 12
END

ii) What is the total price of the car.

474.15 x 60 = 28449.00

What would her payments be if she chose biweekly payments?

N= 26 x 5 = 130
I%= 3.6
PV= 26000
PMT= -218.66
FV= 0
P/Y= 26
C/Y= 12
END

122.97 Rce levated Biweekly

-230.09

230.09 x 122.97 = 28292.94

What is the total price of the car.

218.66 x 130 = 28425.80

↑ frequency = ↓ total cost

Apr 24-7:35 AM

**Key Concepts**

- Conditions such as the term of an annuity and the frequency of the payments are sometimes within your control.
- The change in one or more of the conditions of the annuity affects the future value, the present value, and the payment amount.

7.2 Conditions of an Annuity

q 1-5, 7-9 p.417 & 418

p 438 q.5-7

Apr 24-7:32 AM

Closing Question
MAP 4C
7.2

Erica needs to repay a 14 000 debt. Her bank offers personal loans with terms of one to five years at 9.25% per year, compounded monthly.

Determine the monthly payment for a three year term.
N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
PMT= END

Calculate the total interest paid on the loan.

Determine Erica's payment if she chooses to make bi-weekly payments.
N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
PMT= END

Calculate the total interest paid on the loan.

May 16-7:29 AM

Closing Question
MAP 4C
7.2

Erica needs to repay a 14 000 debt. Her bank offers personal loans with terms of one to five years at 9.25% per year, compounded monthly.

Determine the monthly payment for a three year term.
N= 36 3x26 = 78
I%= 9.26 9.25
PV= 14000 14000
PMT= 446.83 205.80
FV= 0 0
P/Y= 12 26
C/Y= 12 12
PMT= END

446.83 x 36 = 16085.88

Calculate the total interest paid on the loan.

16085.88 - 14000 = 2085.88 Int

205.80 x 78 = 16052.40

2052.40 Int

Determine Erica's payment if she chooses to make bi-weekly payments.
N=
I%=
PV=
PMT=
FV=
P/Y=
C/Y=
PMT= END

Calculate the total interest paid on the loan.

May 16-7:29 AM

Nov 22-12:36 PM